



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/506,648

03/21/2005

Thierry Novet

Serie 5910

4799

7590

06/03/2009

Air Liquide
Intellectual Property Department
Ste. 1800
2700 Post Oak Blvd
Houston, TX 77056

EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/03/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/506,648	Applicant(s) NOVET, THIERRY	
	Examiner Jonathan Crepeau	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/26/09.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-54 is/are pending in the application.
- 4a) Of the above claim(s) 45-54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/21/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I in the reply filed on March 26, 2009 is acknowledged. It should be noted that claims 27-44 should be identified as "previously presented" in the next response since they were added and not part of the original claim set.

Claim Objections

2. Claim 40 is objected to because of the following informalities: in line 4, "form" should be "from." Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by EP 936689. The reference teaches a fuel cell apparatus comprising a series of elementary cells comprising a membrane electrode assembly and separator plates. The apparatus comprises a compressive

Art Unit: 1795

means to press the cells together (see abstract; Fig. 1), which can be activated or deactivated.

The fuel cell stack further comprises a fluid introduction and evacuation means (manifolds 42, 44) that extend along the cells and are connected individually to the cells (see Fig. 2).

Regarding the recitations of "compressive means" and "fluid introduction and evacuation means" in claim 27, these limitations are not considered to invoke 35 USC 112 sixth paragraph since they do not use the "means for..." construction. See MPEP 2181.

5. Claims 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Perry et al (U.S. Patent 6821668). The reference teaches a fuel cell apparatus comprising a series of elementary cells comprising a membrane electrode assembly and separator plates (see Fig. 1). The apparatus inherently comprises a compressive means to press the cells together, so current can be conducted through the stack during normal operation. The fuel cell stack further comprises a fluid introduction and evacuation means (manifolds 50-53 in Fig. 5) that extend along the cells and are connected individually to the cells. The fluid means are "extendable" because the manifolds can be lengthened depending on the operation of sliding gate valve (56, 57) (see col. 3, line 56). Regarding claim 29, the two manifold sections 50, 52 correspond to the claimed "distribution elements" and the valve (56) corresponds to the claimed "intermediate connection."

Thus, the instant claims are anticipated.

Art Unit: 1795

6. Claims 27 and 32-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Fuglevand et al (U.S. Patent 6218035). The reference teaches a fuel cell apparatus comprising a series of elementary cells comprising a membrane electrode assembly and separator plates (201) (see Figures 8 and 9). The apparatus comprises a subrack (30) and a plurality of main body supports (31) for supporting the fuel cells (see Fig. 2, 3). The combination of the subrack and the supports function as a compressive means to press the cells units together, and can be activated or deactivated by removing or attaching the cells. The fuel cell stack further comprises a fluid introduction and evacuation means (54, 55) that extend along the cells and are connected individually to the cells (see Figs. 4, 6, 8). Regarding claim 32, each cell is connected to each fluid means by a corresponding joining device (52) (see Fig. 5). Regarding claim 33, each joining device is hollow and connects to a passage, which is shown as a conduit branching from fluid means 54 (see Fig. 4). Regarding claims 34 and 35, the joining device connects to a corresponding inlet or outlet channel (137) which is connected to the cell (see Fig. 10). Regarding claim 36, each joining device is mounted on a support (31) of the apparatus and wherein there is traverse clearance in the longitudinal direction of the group of cells. Regarding claim 37, each joining device comprises a holding device (element to the right of "52" in Fig. 5), wherein the holding device is located against a face of the support. The face can be the "lower" face depending on the orientation of the apparatus. Regarding claim 38, the apparatus further comprises a flange (52), which corresponds to the claimed "leak proofing means" and which is located against a sealing zone which is located adjacent the channel. It is further noted that "leak

proofing means" is not considered to invoke 35 USC 112 sixth paragraph since it does not use the "means for..." construction. See MPEP 2181.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry et al.

The reference is applied to claims 27-29 for the reasons stated above. However, the reference does not expressly teach that the fluid means comprises an electrically insulating material or a moldable material as recited in claims 30 and 31.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because it would be obvious to make the separator plates containing the manifolds out of an electrically insulating thermoplastic or thermosetting resin in combination with a conductive additive. Such materials are commonly used in PEM fuel cell separator plates and provide good strength, corrosion resistance, and moldability. Accordingly, it would be obvious to use a resin (i.e, an insulating material) in the separator plates

of Perry. As such, the fluid means would comprise an electrically insulating and moldable material, as claimed.

9. Claims 32-34 and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 936689 in view of Lee et al (U.S. Patent 5543240).

EP '689 is applied to claim 27 for the reasons stated above. In addition with regard to claims 39-44, the reference teaches a means for applying uniform compression comprising a first end plate (88), a second end plate (58), an auxiliary plate (68), a tensioning device (62) and a connecting means (92) to connect the first end plate and the auxiliary plate (see Fig. 1). The tensioning device comprises a hydraulic device (see abstract). The connecting device comprises two bars extending along the cells, the bars extending through the auxiliary plate and the first end plate. The apparatus further comprises a means for maintaining the compression applied to the cells comprising a nut (94) located on the bar (see Fig. 1). It is noted that the recitations "means for applying uniform compression" in claim 39 and "means for maintaining the compression applied to said cells" in claim 43 are considered to invoke 35 USC 112 sixth paragraph, however, the recitation "a connecting means to connect" in claim 40 is not considered to invoke 35 USC 112 sixth paragraph.

EP '689 does not expressly teach that each cell is connected to each fluid means by a joining means as recited in claim 32, or that the apparatus further comprises a passage or a channel as recited in claims 33 and 34.

Lee et al. is directed to a fuel cell stack comprising a plurality of fuel cell blocks fluidly connected to a fluid introduction and evacuation means (41, 42) (see Fig. 4). Each cell is connected to the fluid means by a joining device (valve 44). A passage and a channel (areas to the right and left of valves 44 in Fig. 4) fluidly connect the joining means to the fluid means and the cells.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the cell stack and manifold structure of Lee et al. in the fuel cell stack of EP '689. In the abstract, Lee et al. teach that "the fuel cell stack is able to uniformly distribute the reaction gas to each fuel cell unit, thereby increasing the efficient utilization of fuel." Accordingly, the artisan would be motivated to use the cell stack and manifold structure of Lee et al. in the fuel cell stack of EP '689, thereby rendering obvious the subject matter of claims 32-34.

Regarding the limitation in claim 42 that the bar passes through the second end plate, although EP '689 shows the second end plate (58) being within the area defined by the bars, it would be obvious to use a larger end plate having holes for the bars to pass through to increase stability of the stack.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795
June 2, 2009